



E-TECH Testing Services, Inc.

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A Trinity Industries, Inc.
Company

Frequently Asked Crash Test Questions

1. *What is “MASH” I am hearing about?*

Highway safety features (e.g. barriers, terminals, supports, traffic control equipment) are typically qualified for use on the National Highway System through the successful completion of crash testing conducted in accordance with the American Association of State Highway and Transportation Officials “Manual for Assessing Safety Hardware (MASH)”. The FHWA requires all new installations of highway features on the National Highway System (NHS) to have been safety tested and found acceptable in accordance with the recommendations in MASH. As a service to the highway safety industry the FHWA reviews crash test results and issues acceptance letters to developers of crashworthy hardware. The FHWA has approved over 80 new highway devices based upon crash testing conducted by E-TECH.

2. *How much does a crash test cost?*

There are many variables that affect the cost of a crash test. Among these variables are the test article type, crash test specification, vehicle type, level of instrumentation and photographic documentation, foundation and site preparation requirements, installation requirements, and scheduling. For this reason it is not possible for E-TECH to offer “standardized” costs for crash testing. Rather, cost estimates are handled on a “case-by-case” basis. Contact E-TECH for a detailed proposal specific to your crash test program. Standard terms are a 1/3rd down payment with final payment due upon final delivery of the crash test documentation package. Because a certain portion of testing involves setup and mobilization, a 10% discount can often be applied on any subsequent tests conducted on the same day. Final payment is not contingent upon passing or failing the test criteria or product approval and acceptance by any user agency.

3. *How quickly can I get a crash test run?*

Once again there are many variables that effect scheduling of crash tests, including those listed in the answer above. One thing must be kept in mind; the actual crash test itself takes place on a single day, it is the preparation for the crash test that takes the time. It may come as a surprise that many of the issues that tend to delay test programs fall under the client’s responsibility. These include the delivery of the correct test article components, the supply of adequate material specifications and drawings for the test article, and travel arrangements to witness the crash test. The crash test itself can generally be scheduled within two weeks after the client’s obligations are fulfilled provided a special foundation is not required. It must be emphasized again that preparation is the key; there is no second chance to change something once the crash test is underway. E-TECH’s test facilities are outdoors; therefor testing may be subject to delays from rainy or windy weather.

4. *What do I do when the MASH crash test is over?*

Provided the test is judged successful, E-TECH will supply the client with all of the materials they will need to submit to the FHWA for product acceptance. E-TECH’s MASH crash test procedures fully comply with the test parameter, test conditions, and data acquisition requirements of the test specification. High speed digital video, real time DV video, and both

digital still and digital video pre and post photographic documentation are collected. Documentation includes detailed pre and post test measurements of the vehicle interior and exterior. A draft compliance test report and video is submitted for review generally within 45 days after the completion of crash testing. The draft report is in the MASH recommended format and summarizes the program approach, test results, and conclusions relative to MASH and the test specification evaluation factors. The video contains selected views of the photographic coverage with titles summarizing test article configurations, impact conditions, and test results and evaluations. The client has 30 days to review the draft report and video and provide comments. Within 14 days of receiving final comments E-TECH furnishes six (6) bound copies of the final report, one (1) DVD of high speed camera and real time views, one (1) CD containing digital test photographs and report pdf, and two (2) DVD of certification test video. The customer is responsible for forwarding test documentation, along with their request for product acceptance, to the FHWA.

5. *Why should I use E-TECH as opposed to another crash test house?*

Simply put our services are diverse, fully compliant, fast turn-around, high quality, and very competitively priced. E-TECH is a professional testing laboratory offering services primarily to highway design engineers, safety engineers, maintenance engineers, researchers, hardware developers, and others concerned with safety features used in the highway environment. E-TECH specializes in the analysis, testing, and evaluation of highway safety features. Testing and evaluation of safety features is conducted in strict accordance with nationally and internationally recognized procedures and standards. E-TECH is recognized by the United States Federal Highway Administration (FHWA) as a testing agency having significant experience in testing roadside safety features. E-TECH has tested and certified over eighty new products that the FHWA has accepted for use on the National Highway System.

E-TECH is accredited to ISO/IEC 17025-2005 “General Requirements for the Competence of Calibration and Testing Laboratories” by the American Association for Laboratory Accreditation (A2LA Certificate 989.01). E-TECH was the first domestic crash test laboratory to operate a quality system compliant with 17025 and the relevant requirements of the ISO 9000 series of standards. A2LA has a bilateral mutual recognition agreement with the European cooperation for Accreditation. The Agreement is expected to facilitate the acceptance of E-TECH's test and calibration data with a number of European countries whose national accreditation bodies have signed the EA Multilateral Agreement (MLA). EA promotes the recognition and acceptance in all the MLA countries of certificates and reports issued by organizations accredited by national accreditation bodies who have signed the MLA.

E-TECH conducts full scale crash testing to the recognized MASH, EN 1317 and AS / NZS 3845 national and international test standards as well as many other client supplied test specifications. E-TECH also performs a wide variety of laboratory tests on materials used in the construction of highway features including tensile, compression, salt spray corrosion, hardness, vibration and endurance testing, and accelerated environmental exposure testing. E-TECH utilizes state of the art test instrumentation, data collection, and data processing equipment. A prerequisite to A2LA's 17025 accreditation is that E-TECH have in place the facilities, equipment, environment, training, personnel, and experience necessary for the proper and timely completion of testing. All of E-TECH's test measurements are directly traceable to the United States National Institute for Standards and Technology (NIST).